

## ABSTRACT

An electronic control, with a floating ac power supply, that compares the digital signals produced by electrical connections between ac circuit nodes and digital nodes to ascertain whether path(s) in ac circuits containing the ac nodes  
5 are intact or open. The connections are made through passive components which limit the current between nodes to levels the digital devices can safely handle. An open path indicates to the control that an ac switching device is open, a connection has failed, or that an ac load component has failed or is missing. An ac switching device, hereinafter referred to as a switch may be a switch, relay,  
10 triac or similar device, the state of the switch being set by the control or other means. An intact path indicates a closed switch or a present and presumably functional load component. Proper connections enable the control to detect the state of multiple paths while still being able to detect zero crossings. The method can ascertain the state of ac paths even if hot and neutral connections are  
15 inadvertently reversed.